Title (en)

FILTERING TECHNIQUES TO REMOVE NOISE FROM A PERIODIC SIGNAL AND IRMS CALCULATIONS

Title (de)

FILTERVERFAHREN ZUR RAUSCHUNTERDRÜCKUNG BEI EINEM PERIODISCHEN SIGNAL UND IRMS-KALKULATIONEN

Title (fr)

TECHNIQUES DE FILTRAGE POUR SUPPRIMER LE BRUIT D'UN SIGNAL PERIODIQUE ET CALCULS IRMS

Publication

EP 2032995 B1 20170927 (EN)

Application

EP 07795986 A 20070612

Priority

- US 2007013733 W 20070612
- US 81313906 P 20060613
- US 81165007 A 20070611

Abstract (en)

[origin: WO2007146258A2] A signal filtering technique is designed to remove the effects of a periodic, low-frequency noise signal from a signal of interest. A signal waveform is sampled at different points of a number of consecutive periodic noise signal cycles and the collected samples are averaged to produce a corrected signal. The number of consecutive cycles in which samples are taken and averaged is inversely related to the signal amplitude such that as the signal level decreases, the number of cycles examined increases. The technique is particularly applicable to periodic signals associated with the output of Hall effect sensors in an electrical metrology environment. Improved RMS calculations are obtained for filtering low-frequency random noise from Hall sensors by averaging samples at different points of a signal cycle to create a composite desired signal cycle to facilitate other signal calculations. In a given electricity utility meter incorporating solid state circuitry, such metrology RMS calculations may be implemented in a metrology section of solid state devices provided on printed circuit boards, such as utilizing programmable integrated circuit components. By varying the number of cycles summed, the algorithm will adapt to amplitude changes more quickly. By using time averaged samples to filter random noise from the periodic signal of interest, the overall requirements for complex filtering is reduced. Instead, the technique relies on buffering and averaging synchronized samples for a given number of line cycles, so that by increasing the buffer size, larger numbers of line cycles can be accumulated and the filter cut-off frequency reduced.

IPC 8 full level

G01R 13/00 (2006.01); **G01R 15/20** (2006.01); **G01R 19/25** (2006.01); **G01R 21/133** (2006.01)

CPC (source: EP US)

G01R 21/133 (2013.01 - EP US); G01R 15/202 (2013.01 - EP US); G01R 19/2506 (2013.01 - EP US)

Designated contracting state (EPC)

DE FR GB

DOCDB simple family (publication)

WO 2007146258 A2 20071221; **WO 2007146258 A3 20081016**; AU 2007258376 A1 20071221; BR PI0713152 A2 20120327; CA 2655341 A1 20071221; CA 2655341 C 20151124; EP 2032995 A2 20090311; EP 2032995 A4 20110831; EP 2032995 B1 20170927; JP 2010513846 A 20100430; MX 2008016010 A 20090116; TW 200827732 A 20080701; US 2008007247 A1 20080110; US 2011130978 A1 20110602; US 2012095704 A1 20120419; US 7949499 B2 20110524; US 8135564 B2 20120313; US 9116185 B2 20150825

DOCDB simple family (application)

US 2007013733 W 20070612; AU 2007258376 A 20070612; BR PI0713152 A 20070612; CA 2655341 A 20070612; EP 07795986 A 20070612; JP 2009515444 A 20070612; MX 2008016010 A 20070612; TW 96121333 A 20070613; US 201113024684 A 20110210; US 201113280787 A 20111025; US 81165007 A 20070611